



Technical Report - 2014 - 078

# Links between the Floods Directive (FD 2007/60/EC) and Water Framework Directive (WFD 2000/60/EC)

Resource Document

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## Abbreviations

APSFR Areas of Potentially Significant Flood Risk

CA Competent Authority

FD Floods Directive

FRMP Flood Risk Management Plan

HMWB Heavily Modified Water Body

IED Industrial Emissions Directive

PFRA Preliminary Flood Risk Assessment

PoM Programme of Measures

RBD River Basin District

RBMP River Basin Management Plan

SuDS Sustainable Drainage Systems

SWMI Significant Water Management Issues

UoM Unit of Management

WB Water Body

WFD Water Framework Directive

## Glossary of terms

**Artificial water body** means a body of surface water created by human activity.

**Competent Authority** is an authority or authorities identified under Article 3(2) or 3(3) of the Water Framework Directive. The Competent Authority will be responsible for the application of the rules of the Directive within each river basin district lying within its territory.

**Ecological status** is an expression of the structure and functioning of aquatic ecosystems associated with surface waters, classified in accordance with WFD Annex V.

**Flood** is a temporary covering of land by water outside its normal confines

**Flood hazard map** is a map with the predicted or documented extent of flooding.

**Flood risk map** is a map showing the spatial extent of risk (combining information on probability and consequences). Flood risk mapping requires combining maps of flood hazards and vulnerabilities.

**Floodplain** is the part of alluvial plain that would be naturally flooded in the absence of engineered interventions.

**Good surface water status** means the status achieved by a surface water body when both its ecological status and its chemical status are at least "good"..

**Heavily modified water body** means a body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the Member State in accordance with the provisions of Annex II of the WFD.

**Measure** is a term is used in the Water Framework Directive that refers to an action which will be taken to help achieve Water Framework Directive environmental objectives.

**Programme of Measures** defines in detail those actions which are required to achieve the environmental objectives of the Directive within a River Basin District.

**Risk** is the product of the probability that an event will occur and the impact (or consequence) associated with that event.

**River Basin** is the area of land from which all surface run-off and spring water flows through a sequence of streams, lakes and rivers into the sea at a single river mouth, estuary or delta.

**River basin district** means the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under WFD Article 3(1) as the main unit for management of river basins.

**Stakeholders** are individuals or groups that are or could become interested in, involved in or affected by our policies and activities.

**Surface water body** means a discrete and significant element of surface water such as a lake, a reservoir, a stream, river or canal, part of a stream, river or canal, a transitional water or a stretch of coastal water.

# 1 Introduction

## 1.1 Aim

The aim of this paper is to identify potential synergies in the implementation of both the 'Floods' Directive (FD) and Water Framework Directive (WFD). At a meeting of the EU Environment Ministers in Hungary in March 2011, under the discussion on Integrated Management of Extreme Hydrological Events, it was recommended that an integrated approach for the implementation of the FD and WFD should be promoted in order to "maximise synergies". This document is intended to help promote the achievement of this recommendation, noting that coordination means a two-way process, with input from those responsible for the implementation of both Directives, to achieve the available synergies and mutual benefits.

The FD is only in its first implementation cycle and Member States are on a steep learning curve to deliver the requirements of the Floods Directive. Member States generally have only limited experience to date in the coordination of the FD with the WFD, although some experience does exist, examples of which are set out in this document. This paper identifies the requirements for coordination and sets out opportunities for synergies and possible conflict. It is intended to review the paper in the future to take into account the experience of Member States in implementing and coordinating the two Directives in parallel, and to capture and build on experiences and good practice for future reference and application in the second and subsequent cycles.

## 1.2 Structure of the document

This document covers a wide range of requirements and possible links between the FD and WFD. This section provides a brief introduction to the two Directives and the reasons why coordination between them is beneficial. The requirements and opportunities for synergies that may arise in relation to governance and the timetables for the implementation of the two Directives are examined in Sections 2 and 3 respectively. Sections 4 and 5 then discuss the requirements and opportunities relating to the specific stages of implementation, as well as in public information and consultation under the two Directives. Conclusions are provided in Section 6.

*Note: Throughout the document, examples of Member States' actions or other scenarios are coloured pink and described in a textboxes.*

## 1.3 Audience for the document

The primary target audience for this paper is those involved in the implementation of the FD and/or the WFD, at either an international, national, regional or local scale. The paper is also intended to be of benefit to other parties interested in the implementation processes of the two Directives.

## 1.4 Background to the Floods Directive (FD)

Floods have the potential to cause fatalities, displacement of people and damage to the environment, to severely compromise economic development and to undermine the economic activities of the Community. The EU Directive on the assessment and management of flood risks [2007/60/EC], often referred to as the 'Floods' Directive, was adopted on 23 October 2007. Its aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The approach is based on a six year cycle of planning, subject to the application of transitional arrangements. The development of a Floods Directive was considered after the huge and devastating floods that struck Central Europe in 2002. It came into force with a principal objective to reduce the risk of floods and to take future changes in the risk of flooding as a result of climate change into account. The focus of the FD is broad aiming to reduce the adverse consequences for human health, economic activity as well as the environment and cultural heritage. The WFD is concerned with the protection of water as a resource.

The FD is to be implemented in Member States in three stages. During the first stage, the EU Member States should have carried out Preliminary Flood Risk Assessments (PFRAs) for river basins and for coastal zones by 22 December 2011, in order to identify areas of existing or foreseeable future potentially significant flood risk (referred to as 'Areas of Potentially Significant Flood Risk (APSFs)'). An important concept in the FD is flood risk. This is a combination of the probability of the flood occurring and its consequences.

During the second stage, Member States should prepare flood hazard maps and flood risk maps for the APSFs identified by 22 December 2013. These should identify areas prone to flooding during events with a high (optional), medium and low probability of occurrence, including those where occurrences of floods would be considered an extreme event. The maps will also have to include details of expected flood extent

and water depths (flood hazard maps) and economic activities that could be affected, the number of inhabitants at risk and the potential environmental damage (flood risk maps).

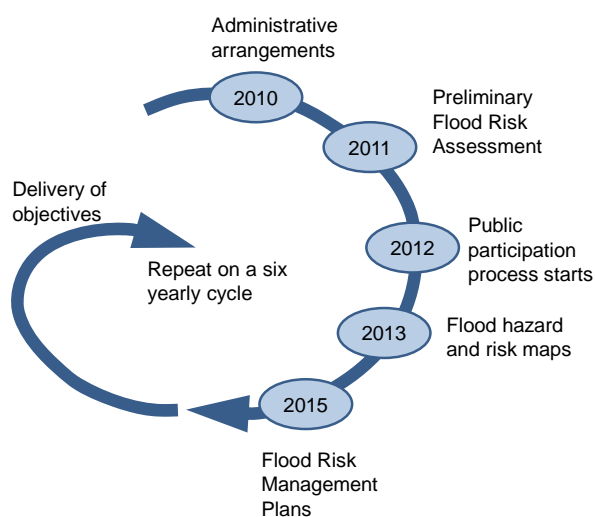
The third stage will require Member States to produce catchment-based Flood Risk Management Plans (FRMPs) by 22 December 2015, thereby harmonizing with the WFD River Basin Management Plan (RBMP) cycle. The FRMPs will be focused on prevention, protection and preparedness, setting objectives for managing the flood risk within the APSFRs and setting out a prioritised set of measures for achieving those objectives.

Member States should coordinate their flood risk management practice in shared river basins, including with third countries, and shall not undertake measures that would increase the flood risk in neighbouring countries. Member States should also take into consideration long term developments, including climate change, as well as sustainable land use practices in the flood risk management cycle addressed in the FD. All assessments, maps and plans prepared shall be made available to the public, and Member States are required to encourage the active involvement of interested parties in the preparation of the FRMPs.

To summarise the FD is designed to:

- establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community
- establish a process for producing flood hazard maps and flood risk maps in order to address the flood risk
- in the flood risk management plans address all aspects of flood risk management focusing on prevention, protection, preparedness, including flood forecasts and early warning systems and taking into account the characteristics of the particular river basin or sub-basin.

The FD planning cycle is shown in Figure 1.1. The FD planning cycle is aligned with that of the WFD and there is a requirement for coordination of the two Directives. It is important to note that, as of October 2013, the first Flood Risk Management Plans have yet to be produced and hence Member States are still undergoing a learning process in how the synergies between the FD and WFD can be taken advantage of at a practical level.



**Figure 1.1** FD planning cycle<sup>1</sup>

<sup>1</sup> Note that the obligation of public participation under the Floods Directive for the 2011 Preliminary Flood Risk Assessment is only about making the information available (see Floods Directive article 10). More active participation on this stage of implementation is desirable but optional.

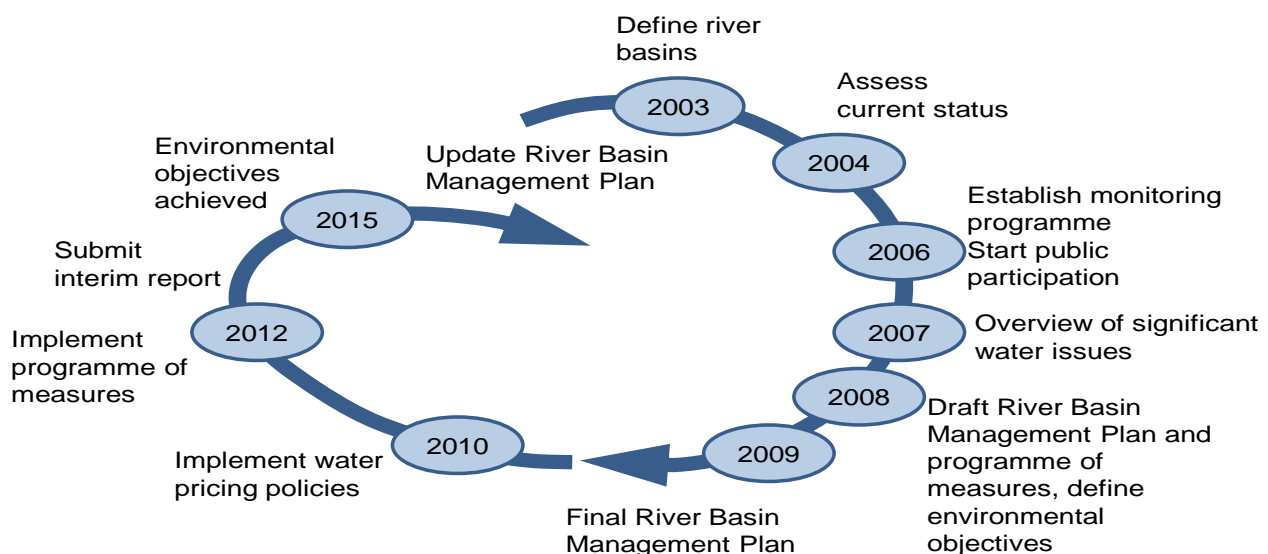
## 1.5 Background to the Water Framework Directive (WFD)

The Water Framework Directive (WFD) establishes a framework for Community action in the field of water policy [2000/60/EC] and was adopted on 23 October 2000. The WFD is designed to improve and integrate the way that water bodies are managed throughout Europe. It promotes an integrated approach to protecting water and developing a sustainable use of the water environment, managing water within the wider ecosystem and taking into account the movement of water through the hydrological cycle. The WFD introduces modern concepts intended to shift EU water governance away from focusing solely on the control of water pollution and towards the application of principles and practices associated with catchment-based 'Integrated Water Resources Management'.

The WFD requires the production of a River Basin Management Plan (RBMP) for each river basin. The first RBMPs were adopted at the end of 2009. They are then updated every six years thereafter. The plans are based on a detailed analysis of the impacts of human activity on the water environment and set environmental objectives for all groundwater bodies and surface water bodies (including transitional water bodies and coastal water bodies) within each River Basin District (RBD). Additional to the plan, a programme of measures has to be established to improve water bodies where required. The overarching objective is for Member States to aim to reach good chemical and ecological status or potential in surface waters and good chemical and quantitative status in groundwaters by 2015 subject to certain exceptions. To summarise, the WFD is designed to:

- Enhance the status and prevent further deterioration of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems
- Promote the sustainable use of water use based on a long-term protection of available water resource
- Reduce pollution of water, especially by 'priority substance' and 'priority hazardous substances'<sup>2</sup>
- Ensure progressive reduction of groundwater pollution
- Contribute to mitigating the effects of floods and droughts

The WFD planning cycle is shown in Figure 1.2.



**Figure 1.2 WFD planning cycle**

<sup>2</sup>Priority substances are harmful substances. Priority hazardous substances are a subset of these and are considered extremely harmful. Concentrations of priority and priority hazardous substances in water must meet the WFD environmental standards by 2015 in order to achieve good chemical status. In addition the emission of priority hazardous substances must be phased out.



## 1.6 Reasons for coordination between the FD and WFD Directives

The coordination between the WFD and the FD offers the opportunity to adopt a new approach to optimize the mutual synergies and minimise conflicts between them. There are a number of reasons why better coordination is required. These include:

- The overlap of legal and planning instruments in many Member States
- Planning and management under both Directives generally use the same geographical unit i.e. the river basin which acts as natural “reference area” for both water quality and flood risk management
- Aiding the efficiency of the implementation of measures and increasing the efficient use of resources. Measures taken under one Directive may have an influence the objectives under the other. Coordination provides an opportunity to maximise synergies by identifying cost-effective measures which serve multiple purposes and can result in “win-win” measures being implemented
- An expectation from many stakeholders that an integrated approach will be taken

There are also series of references to the WFD set out by the FD to support coordination and possible integration between the two Directives, as part of a holistic approach to water management. Article 9 of the FD explicitly states that Member States shall take appropriate steps to coordinate the application of the FD and WFD, focusing on opportunities for improving efficiency, information exchange and for achieving common synergies and benefits with respect to the environmental objectives in Article 4 of the WFD in particular such that:

- Flood hazard and risk maps contain information that is consistent with relevant information in the WFD (in particular from WFD Article 5 analysis)
- Development of FRMPs should be carried out in coordination with and may be integrated into reviews of RBMPs
- The active involvement of all interested parties should be coordinated as with those of the WFD

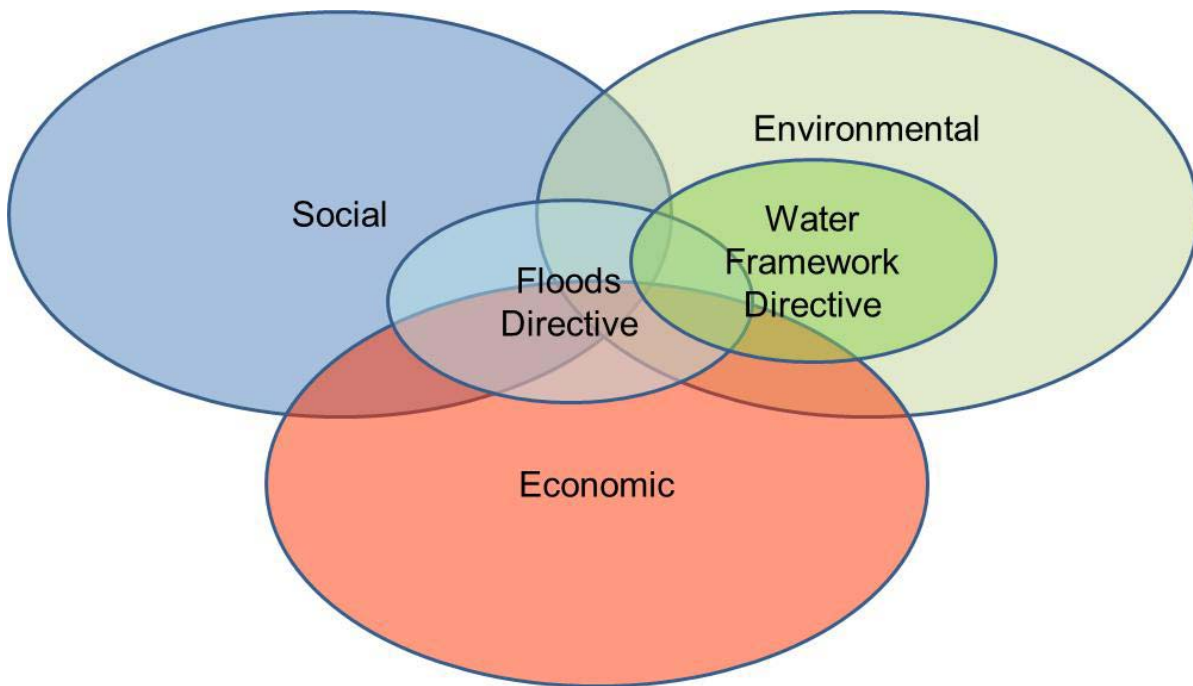
The main benefits of coordinating the FD with the WFD are summarised below and examples of these benefits are given throughout this document.

- Improving efficiency via:
  - Presenting information to the public in one place
  - Cross referencing of objectives to ensure mutual benefits realised
  - Coordinating consultations on FRMPs and RBMPs increases the opportunities for synergies to be recognised
- Information exchange via:
  - Collecting data once and using it many times.
  - Integration of data, which allows for easier identification of pressures on the water environment
  - Sharing data assists better understanding of the issues and potential solutions to identify reductions in flood risk and improving the environment
- Achieving common synergies and benefits having regard to the environmental objectives laid down in Article 4 of the WFD including:
  - Improved integrated river basin management
  - Identify areas where measures can meet both FD and WFD aims e.g. river and floodplain restoration, use of Sustainable Drainage Systems (SuDS), changes in land management and creation of multifunctional wetlands

There are many measures that aim to reduce flood risk that can have multiple benefits for water quality, nature and biodiversity, as well as in terms of regulating water flows and groundwater recharge in water scarce areas. River and floodplain restoration, whereby natural processes are restored, is likely to provide a significant contribution to both FD and WFD objectives. This is because of the high degree of dependency that quality indicators such as fish and invertebrates have on rivers and floodplains and the role that floodplains play in flood risk management.

There are also many benefits that can be gained from the coordination of the participation of stakeholders for the two Directives. These are described in Section 2.5.

Dimensions of sustainable development such as environmental, economic and social aspects are covered to different degrees in the two Directives. The environmental aspect is the main one covered by the WFD, whereas for the FD all these aspects are relevant (Evers and Nyberg, 2013). . Figure 1.3 shows how the three different aspects of sustainability overlap between the two Directives.



(Source: Adapted from Evers and Nyberg, 2013)

**Figure 1.3 Aspects of sustainability addressed by the FD and WFD and their overlapping areas**

## 1.7 Overview comparison of the FD and WFD

Table 1.1 provides an overview of the comparison of the FD and WFD [please see next page].

**Table 1.1 Overview comparison of the FD and WFD**

Dimension of the Directive	Floods Directive	Water Framework Directive
<b>Political objective</b>	To establish a framework for the assessment and management of flood risk to reduce adverse consequences for human health, the environment, cultural heritage and economic activity	To establish a framework for the protection of water bodies that: <ul style="list-style-type: none"> <li>• Prevents further deterioration and protects and enhances the status of aquatic ecosystems</li> <li>• Promotes sustainable water use</li> <li>• Aims at the enhanced protection and improvement of the aquatic environment</li> <li>• Ensures the progressive reduction of the pollution of groundwater</li> <li>• Contributes to mitigating the adverse effects of floods and droughts</li> </ul>
<b>Legal dimensions</b>		
Monitoring	No monitoring of the water environment is explicitly required	Monitoring of chemical, biological, hydromorphological and physico-chemical elements to establish overall water status. Three types of monitoring: surveillance, operational and investigative
Specification of the objectives to be met	The FRMP should include defined flood risk management objectives and a description of the prioritisation of measures aimed at achieving those objectives, and the way in which the implementation of the plan will be monitored	General objective is good status and prevent deterioration. Exemptions to these general objectives are possible if the conditions set in the Directive are fulfilled.
Implementation and control of measures	FRMPs shall include a summary of the measures for achieving the objectives, and a description of the prioritisation and the way in which the implementation of the plan will be monitored. Updates of FRMPs should include a description and explanation of any measures that have not been taken forward and a description of any additional measures since the publication of the previous FRMP No penalties described	Control of effectiveness of measures is done through operational monitoring. Member States to determine the penalties applicable to breaches that are effective, proportionate and dissuasive
<b>Management dimensions</b>		
Time scale (schedule and milestones)	2007 to 2015, 2021, 2027 (revision after six years) 2007 Directive was adopted 2009 Transposition 2010 Administrative arrangements in place 2011 PFRAs 2013 Publish flood hazard and flood risk maps 2015 Publish Flood Risk Management Plans 2021 Second management cycle ends	2000 to 2015, 2021, 2027 (revision after six years) 2000 Directive was adopted 2003 Transposition and administrative arrangements 2004 Characterisation of river basins 2006 Establish monitoring programme 2009 Finalise River Basin Management Plans and programme of measures 2015 Meet environmental objectives and update River Basin Management Plans 2021 Second management cycle ends
Participation/Stakeholder involvement	Member States shall encourage active involvement of interested parties in the production, review and updating of FRMPs	Active involvement of interested parties in the implementation of the Directive has to be encouraged, Information is required.

(Source: Adapted from Evers and Nyberg, 2013)

## 1.8 Legal requirements and potential for synergies

The development of RBMPs under the WFD and of FRMPs under the FD are elements of integrated river basin management. FD Recital 17 states that: “*The two processes should therefore use the mutual potential for common synergies and benefits, having regard to the environmental objectives of the WFD, ensuring efficiency and wise use of resources while recognising that the competent authorities and management units might be different under the FD and WFD*”. Within the FD there are a number of legal requirements set out for coordination with WFD, these principally relate to the following FD Articles.

<b>FD article</b>	<b>Connection to WFD Article</b>
2 (General provisions)	Definitions of “river”, “river basin”, “sub-basin” and river basin district” under WFD Article 2
3(1) (General provisions)	FD shall make use of administrative arrangements within River Basin Districts under WFD Articles 3(1), 3(2), 3(3), 3(5) and 3(6) (river basin districts, competent authorities and international coordination). However, different units of management and competent authorities from those in the WFD can be designated.
6(5)(c) (Flood hazard and flood risk maps)	Flood risk maps should show installations referred to in Annex I of the Directive 96/61/EC concerning integrated pollution prevention and control that might cause accidental pollution in the case of flooding and potentially affect protected areas identified in Annex IV(i), (iii) and (v) of the WFD relating to water abstraction for human consumption, water bodies designated as recreational waters and areas designated for the protection of habitats or species where the maintenance or improvement of the status of the water is an important factor in their protection
7 (FRMPs)	FRMPs should take into account the environmental objectives of Article 4 of the WFD
9(1), 9(2), 9(3) (Coordination with WFD, public information and consultation)	Appropriate steps should be undertaken to coordinate the FD with the WFD focusing on opportunities for improving efficiency, information exchange and achieving common synergies and benefits having regard to the environmental objectives in WFD Article 4 in particular: <ul style="list-style-type: none"> <li>- The development and review of flood hazard and flood risk maps should be carried out such that the information they contain is consistent with relevant information presented according to the WFD. They should be coordinated with and may be integrated into the reviews provided for in WFD Article 5(2)</li> <li>- The development and review of the FRMP should be carried out in coordination with and may be integrated into the reviews of the river basin management plans provided for in WFD Article 13(7)</li> <li>- The active involvement of all interested parties under FD Article should be coordinated, as appropriate, with the active involvement of interested parties under WFD Article 14</li> </ul>
12 (Implementing measures and amendments)	The Commission shall be assisted by the committee established under WFD Article 21
Annex A(I)(4)	Components of the first FRMPs should include a summary of the measures and their prioritisation aiming to achieve the appropriate objectives of flood risk management, including the measures taken in accordance with Article 7, and flood related measures taken under other Directives including the WFD
Annex A(II)(3)	The FRMP should include a description of the implementation of the plan including a list of Competent Authorities and, as appropriate, a description of the coordination process within any international river basin district and of the coordination process with the WFD

## 2 Governance

This section sets out the requirements and highlights key opportunities for coordination between the FD and WFD in the area of governance, i.e. how the implementation of the Directives is managed. There are Member States where the coordination between the FD and WFD is enshrined in legislation.

### **Examples of Member States where coordination between the FD and WFD is enshrined in legislation**

- The Scottish Government's legislation requires appropriate consistency and coordination between the FD and WFD with the production of reports to be aligned and integrated where possible.
- The Belgium Flemish decree on integrated water management integrates the drafting and consultation processes of the FRMP within the RBMP processes. There will be one RBMP for each district, integrating the requirements of the FD and WFD.
- The Austrian Water Act states that FRMPs shall be coordinated with the production and public participation of RBMPs and that these may be integrated

## **2.1 Spatial management and reporting units**

The following spatial areas are defined in the WFD:

- A River Basin District (RBD) is defined as the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters. These were defined under the implementation of the WFD as the main unit for management of river basins (WFD Article 2(15)).
- A River Basin is defined as the area of land from which all surface runoff flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta (WFD Article 2(13)).
- A Sub-Basin means the area of land from which all surface run-off flows through a series of streams, rivers and, possibly, lakes to a particular point in a water course (normally a lake or a river confluence) (WFD Article 2(14)).

The FD states that Member States shall make use of the WFD arrangements in WFD Article 3, i.e. WFD RBDs. However, FD Article 3(2b) allows for the definition of different Units of Management (UoMs) which can be Coastal Areas or River Basins, but these cannot be Sub-Basins.

### **Examples of Members States where FD Units of Management (UoMs) vary from WFD River Basin Districts (RBDs)**

The majority of Member States have chosen "the default option" which is to use the WFD RBDs as the Units of Management (UoM) for the implementation of the Floods Directive. The two exceptions are:

- Italy has eight WFD RBDs and 51 FD UoMs. Italy has a number of Competent Authorities (CAs) at national and regional level to manage the UoMs and ensures coordination with the CAs for the WFDs RBDs
- Ireland has seven WFD RBDs and 26 FD UoMs. Ireland is ensuring coordination by implementing the FD through contracts at the level of the WFD RBDs, with each incorporating the respective FD UoMs

When identifying different UoMs it is important for the Member States to ensure coordination between the geographical areas managed under the FD UoM and the WFD RBD covering the same areas, in order to ensure the appropriate alignment between the Directives and their requirement.

Planning under both Directives must be at the RBD or UoM scale. However, the assessments and analysis of measures will generally be focused on smaller hydrological units or areas, such as water bodies (WFD) or APSFRs (FD), taking into account the need to take a catchment-based approach, considering both upstream and downstream impacts of measures and cumulative effects.

The FD explicitly states that only "river basins" and "coastal areas" can be designated as FD units, it is important to note that the hydrological boundaries of a river basin (including its sub-basins) should be respected. This means that an individual sub-basin cannot be identified as a FD UoM as it has to include all surface water flows to the sea. "Coastal areas" are not defined in either Directive although "Coastal waters" are defined in WFD Article 2(7) as surface waters on the landward side of the one nautical mile baseline. It shall also be noted that estuaries of river basins cannot be designated separately from the respective river basin, as the river basin definition includes the "river mouth, estuary or delta".

## 2.2 Competent Authorities (CAs)

The FD states that Member States shall make use of the WFD arrangements in WFD Article 3. However, FD Article 3(2)(a) allows for the definition of different CAs. Whilst most Member States have the same CAs for FD and WFD the number of CAs for the FD compared to the WFD do vary in some Member States.

### **Examples of Member States where the FD CAs and WFD Competent Authorities (CAs) are different**

- Poland has eight WFD CAs and 46 FD CA, which includes the eight WFD CAs.
- Ireland has eight WFD CAs and one FD CA, which is different to any of the WFD CAs.

While different CAs may be appointed for the implementation of the two Directives, they are required to coordinate on the implementation of the Directives. In the event that different CAs are appointed for the FD, then the relevant details, as set out in Annex I of the WFD, must be reported. Information exchange and/or coordination are required between CAs in transboundary RBDs or UoMs (FD Recital 15 and Articles 4(3), 5(2), 6(2) and 8, and WFD Articles 3, 13(2), 13(3)).

At a European level, the same regulatory committee (referred to as the 'Article 21 Committee') and conflict resolution process is used for both FD and WFD.

## 2.3 Coordination of the FD and WFD where there are different CAs or UoMs

Feedback to date shows that many Member States are either using, or intending to use existing frameworks for the FD that have been set up for the WFD. Typically national legislation puts an obligation on relevant public authorities to comply with all Directives in carrying out their statutory functions. This includes the WFD and FD, hence irrespective of differences in CAs or UoMs, public authorities are obliged to comply. Where the same CA is appointed there are in principle no barriers to coordination envisaged. Where the CAs are different for the FD and WFD, many Member States experience good cooperation between the relevant CAs.

As the majority of Member States have the same UoMs, no coordination barriers are foreseen owing to UoM issues. Where the FD UoM differs from the WFD river basin district, it could further complicate coordination.

It is recognised that even with consultation and coordination systems in place, effective coordination can still be difficult owing to differences between CAs such as: funding mechanisms, differing objectives, corporate structures and language. Effective coordination can be achieved by ensuring adequate communication throughout the process to ensure mutual awareness of objectives, direction, progress and decisions. This may involve cross-representation of CAs in the management structures for both Directives, both at national and RBD level in addition to close communication (e.g. via workshops, meetings) particularly at critical stages (e.g. development of measures).

## 2.4 Transboundary governance and coordination

Of the 124 RBMPs received by the EC as of 14 November 2012, 75% of them concerned transboundary river basins. Cross-border cooperation and coordination of implementation processes is also essential to implement the WFD principle of management at the river basin scale. With the adoption of the WFD, international cooperation has been reinforced and improved significantly. It has progressed in some cases from an exchange of information to a joint problem diagnosis and joint decisions on transboundary measures (EC, 2012).

Many of the established international river commissions have both water management and flood risk management in their mandate and already coordinate water quality, quantity and flood risk management (e.g. the Danube, Elbe, Rhine, Maas, Scheldt). Sometimes these are complemented by bilateral agreements between some countries only, for instance sharing one particular sub-basin.

A number of Member States have existing processes and working structures tailored to their individual requirements for the implementation of the WFD. These can take the form of a series of Technical Protocols between international RBDs with all neighbouring Member States such as this is the case in parts of the River Danube basin. This is an international agreement providing for the establishment of expert groups from the CAs, which met regularly to exchange information and to coordinate issues important for the development of the RBMPs. Within larger basins cooperation can be challenging, hence the work of

international commissions is of special importance. These commissions can promote the sharing of good practices and help to agree other trans-boundary water issues including floods.

In addition to linking WFD and FD, other issues such as nature, biodiversity, emergency management and water demand (e.g. water supply, irrigation, hydropower) are also relevant for integrated river basin management. This challenge of achieving multiple goals of different stakeholder interests and at the same time achieving objectives of the WFD and FD will have to be tackled also at the transboundary level.

#### **Examples of transboundary coordination relating to the FD and WFD**

- Spain and Portugal utilise the existing Albuferia agreement to coordinate both the WFD and FD. This addresses WFD/quality and floods/infrastructures security issues.
- Bulgaria and Greece have an Agreement for cooperation for the implementation of WFD and FD which uses arrangements and establishment of working groups.
- Some Member States are involved in large transboundary bodies such as the International Commissions for the Protection of the Danube (ICPDR), the Elbe (ICPER) the Rhine (ICPR) and the Sava (ISRBC). These commissions' working structure have been used to integrate FD transboundary coordination requirements.
- The Netherlands as well using the existing International Commissions, uses also bilateral committees for smaller trans-border rivers.
- In Austria trans-boundary issues are addressed by International Commissions (ICPDR, ICPR, ICPER) and bilateral committees with neighbouring countries.
- The Czech Republic has formally established transboundary water committees with all neighbouring countries based on bilateral agreements setting up trans- boundary committees.
- The Finnish-Swedish Border River Commission is the coordinating body for cooperation in transboundary issues according to, for example WFD and FD implementation as well as amongst other cooperative issues.
- Latvia has joint Technical Protocols with Lithuania and Estonian for a WFD coordination in a series of IRBDs, which will be adapted to also address the FD.
- Although the border between Scotland and England for the Solway Tweed RBD is not considered an international border in EU law, a separate cross-border advisory group is being set up for the FD. This will draw on existing arrangements for WFD reporting where appropriate.
- Northern Ireland (UK) and Ireland cannot use the WFD trans-boundary groups as there are different Competent Authorities but are establishing different groups for the FD.
- Slovenia, in promoting more integrated RBM, are implementing some integrated international projects such as Drava River Vision and Dramurci.

## **3 Timetable**

### **3.1 FD reports and timetables**

There are three key stages required in the implementation of the FD on a rolling six year basis. These are:

1. PFRA report and identification of APSFR (FD Article 4 and 5)
2. Flood hazard and risk maps (FD Article 6)
3. FRMP (FD Articles 7, 8 and Annex I)

The dates associated with the above stages are set out in Table 3.1.

### **3.2 WFD reports and timetables**

The WFD sets out a number of requirements, including:

- Member States for each RBD shall conduct an analysis of its characteristics, a review of the impact of human activity on the status of surface waters and on groundwater, and an economic analysis of water use according to the technical specifications set out in Annexes II and III (WFD Article 5). These

assessments have to be reviewed every six years, as a preparatory step for the establishment of the monitoring programmes and the preparation of the river basin management plans.

- Member States shall establish monitoring programmes (WFD Article 8)
- Member States should encourage active public involvement in WFD implementation. Member States will publish and consult on:
  - a) A timetable and work programme for the production of the River Basin Management Plan (RBMP), including a statement of the consultation measures to be taken
  - b) An interim overview of the Significant Water Management Issues (SWMI) identified in the river basin
  - c) Drafts of the River Basin Management Plan (RBMP) (WFD Article 14)
- Member States shall establish RBMPs and a Programme of Measures (PoMs) (WFD Article 11 and 13) and they shall publish the RBMPs
- Member States shall review and update the PoM and the RBMP (WFD Article 11(7) and Article 13(7)).

The dates associated with the above stages are set out in Table 3.1.

### **3.3 Synergies in the FD and WFD timetables**

Member States shall take appropriate steps to coordinate the application of all aspects of implementation focusing on opportunities for improving efficiency, information exchange and for achieving common synergies and benefits (FD Article 9), and more specifically:

- The flood maps and the reviews of the characterisation analysis required under WFD Article 5(2) and the information in the flood maps shall be consistent with relevant information presented under the WFD (FD Article 9(1)) – 22 December 2013 and during the preceding period
- The development and review of the FRMPs and RBMPs shall be coordinated, and may be integrated (FD Article 9(2)) – 22 December 2015 and during the preceding period
- The active involvement of all stakeholders under both Directives shall be coordinated, as appropriate (FD Article 9(3))

In addition to the specific coordination requirements set out under the second and third bullet points above, it can be seen from Table 3.1 that there are a number of parallel activities where Member States may take appropriate steps, or deem it appropriate, to coordinate activities under the two Directives, including:

- Publication of a work programme and timetable for preparation of, and consultation on, the FRMPs alongside the publication of the work programme and timetable as required for the RBMPs – 22 December 2012 (see Section 5)
- Information exchange between the flood mapping process and the characterisation process – 22 December 2013 and preceding period (see Section 4)
- Parallel publication of draft FRMPs along with the RBMPs in December 2014 for coordinated public consultation



**Table 3.1 Timetables for the FD and WFD**

FD		Deadline	WFD	
		<b>23 October 2000</b>	Adoption	Article 25
		<b>22 December 2003</b>	Transposition Identification of RBDs and Competent Authorities	Article 24 Article 3
		<b>22 December 2004</b>	Characterisation of river basin: pressures, impacts and economic analysis – completed	Article 5
		<b>22 December 2006</b>	Monitoring network established. Consultation on Timetable and Work Programme of RBMP	Article 8 Article 14
Article 18	Adoption	<b>26 November 2007</b>		
		<b>22 December 2007</b>	Consultation on SWMI	Article 14
		<b>22 December 2008</b>	Consultation on Draft RBMP	Article 13, Article 14
Article 17	Transposition	<b>26 November 2009</b>		
		<b>22 December 2009</b>	RBMP and PoM completed	Article 13 and 11
Article 3	Identification of RBDs/UoMs, Competent Authorities and Administrative Arrangements to be in place	<b>26 May 2010</b>		
Article 13	Transitional Measures deadline	<b>31 December 2010</b>	Recovery of costs for water services	Article 9
Articles 4, 5 and 10	PFRA completed (and made available to public)	<b>22 December 2011</b>		
		<b>22 December 2012</b>	First Progress Interim Report on POM implementation. Second consultation on Timetable and Work Programme of RBMP	Article 11 Article 15 Article 14
Articles 6 and 10	Flood Hazard and Flood Risk Maps completed (and made available to public)	<b>22 December 2013</b>	Second characterisation completed Second consultation on SWMI	Article 5 Article 14
		<b>22 December 2014</b>	Consultation on second Draft RBMP.	
Articles 7 and 10	FRMP published and consultation completed	<b>22 December 2015</b>	First management cycle ends. Meet first environmental objectives deadline Second RBMP and PoM completed	Article 4
Articles 14 and 10	Second PFRA completed (and made available to public)	<b>22 December 2018</b>	Second Progress Interim Report on POM implementation Third Consultation on Timetable and Work Programme of RBMP	Article 11, Article 15 Article 14
Articles 14 and 10	Second Flood Hazard and Flood Risk Maps completed (and make available to public)	<b>22 December 2019</b>	Third Characterisation completed Third Consultation on SWMI	Article 5 Article 14
		<b>22 December 2020</b>	Third Draft RBMP for consultation.	
Article 14, 7 and 10	Period of First FRMP ends Second FRMP and consultation completed	<b>22 December 2021</b>	Period of second RBMP ends Third RBMP and PoM completed	Articles 4 and 13
<b>2022 to 2027 identical to 2015 to 2021</b>				
Article 14, 7 and 10	Period of second FRMP ends Third FRMP and consultation completed	<b>2027</b>	Period of third RBMP ends	Articles 4 and 13

Note Publication of draft FRMPs and draft RBMPs should, if possible and appropriate, take place to permit coordinated consultations with stakeholders (see Section 5)

## 4 Stages of implementation

### 4.1 Preliminary Flood Risk Assessments (PFRA)

#### 4.1.1 Information produced as part of the WFD that could be of use in PFRAs

The PFRA provides a high level summary of significant flood risk for each UoM, based on available and readily derivable information. The development of new information is not required, but new analysis of existing information may be necessary. The PFRA is the first step in delivering a FRMP. The PFRA should cover historical flood events and the potential for future flood events that may have a significant adverse consequence on either, human health, the environment, cultural heritage or economic activity. This information is then used to identify the Areas of Potential Significant Flood Risk (APSFR), which are the areas that will be the priority for more detailed flood risk management assessment in the flood maps and FRMP stages.

A wide range of datasets are needed for covering information for all four objectives of the FD. Information such as about where people live and work, buildings and their function, critical infrastructure, vital societal functions, objects that are vulnerable and at risk, cultural heritage, river discharges, water levels at lakes and the sea, expressed as probabilities or return periods etc.

A range of relevant spatial datasets are often produced for the implementation of the WFD that can also be of use for the PFRA and other aspects of the FD. These are typically in Geographical Information System (GIS) format and can include aspects such as:

- River network
- RBD outline
- River catchments
- River typology
- Water Bodies (WBs) outline for surface, transitional, coastal and groundwater, protected areas
- Sites that fall under the Industrial Emissions Directive (IED)
- Water treatment plants
- Point source discharges
- Hydrological monitoring network
- Hydrological data
- Digital terrain model (topographic data), administrative borders
- Land use classification data
- Register of buildings
- Inventory of wetlands
- Reaches of river that have been subject to morphological alterations (e.g. by dams or weirs)
- Information on point and diffuse pollution sources
- Characteristics and impacts of current and future human activities in the catchment
- Flow levels to assess changes in normal flow regimes
- Bodies of water used for the abstraction of water intended for human consumption

Information on small hydropower structures, water abstraction structures and general information or studies on other various pressures, impacts and measures such as hydromorphology and land use patterns may also be available. The most useful layers of information are those which contain information to assess vulnerability (e.g. IED plants, water treatment plants, drinking water protected areas) and consequently flood risk.

Experience to date shows that WFD information and maps can satisfy some requirements of the PFRA but WFD information is not sufficient alone. The PFRA needs more flood specific information such as historical information on flood events, geographic data, urban planning information, population statistics, economic activities, Digital Terrain Models (DTM), meteorological information, civil protection information and other national statistics. To evaluate the flood risk, more accurate data on topography and land use are desirable if available.

In some Member States, to assist in harmonising the PFRA with the WFD measures, the WFD competent authorities were proactively engaged to evaluate the impacts of flooding particularly for the environment and cultural heritage aspects. This assists in tying the WFD knowledge into the FD process. Similarly, as the PFRA takes into account environmental risks, it is prudent that the outcome of the PFRA, should be taken into account during the WFD process. This will assist in identifying areas of potential flood risk with concern

for e.g. water pollution and will promote the concept of considering flood risks in the evaluation of overall pressures on water bodies under the WFD.

#### **Example of synergies between the WFD and FD in production of the PFRA in Northern Ireland, UK**

Northern Ireland used the WFD competent authority to consider the impacts of flooding on the environment and cultural heritage for the PFRA and to ensure there were no barriers between the approach taken for both Directives.

#### **Example of synergies between the WFD and FD in production of the PFRA for the Danube River basin**

A PFRA has been produced for the Danube River Basin by the International Commission of the Danube River. This basin covers 13 countries. Several of these countries used data that they had collated as part of the WFD process to assist with their contribution to the overall PFRA for the Danube. For example, in Austria the available geo-data on risk receptors such as population, infrastructure, potential pollutants, WFD protected areas and cultural heritage that had been collected as part of the WFD process were used. In Bulgaria the criteria used for the assessment of the significance of floods were: the number of people affected; affected important industrial and infrastructure objects; affected IED plants; polluted Natura2000 protected areas and drinking water protected areas. These data sets had already been collated digitally as part of the process to meet the requirements of the WFD.

(Source: International Commission for the Protection of the Danube River, 2012b)

#### **Example of identification and prioritisation of measures with synergy effects between WFD and FD in Germany**

In Germany a catalogue of measures according to the WFD and/or FD was adopted by the German Working Group on water issues of the Federal States and the Federal Government ("LAWA"). To identify synergy effects between measures under the directives all these measures were categorised in three groups regarding their impacts to achieve the WFD respectively FD objectives.

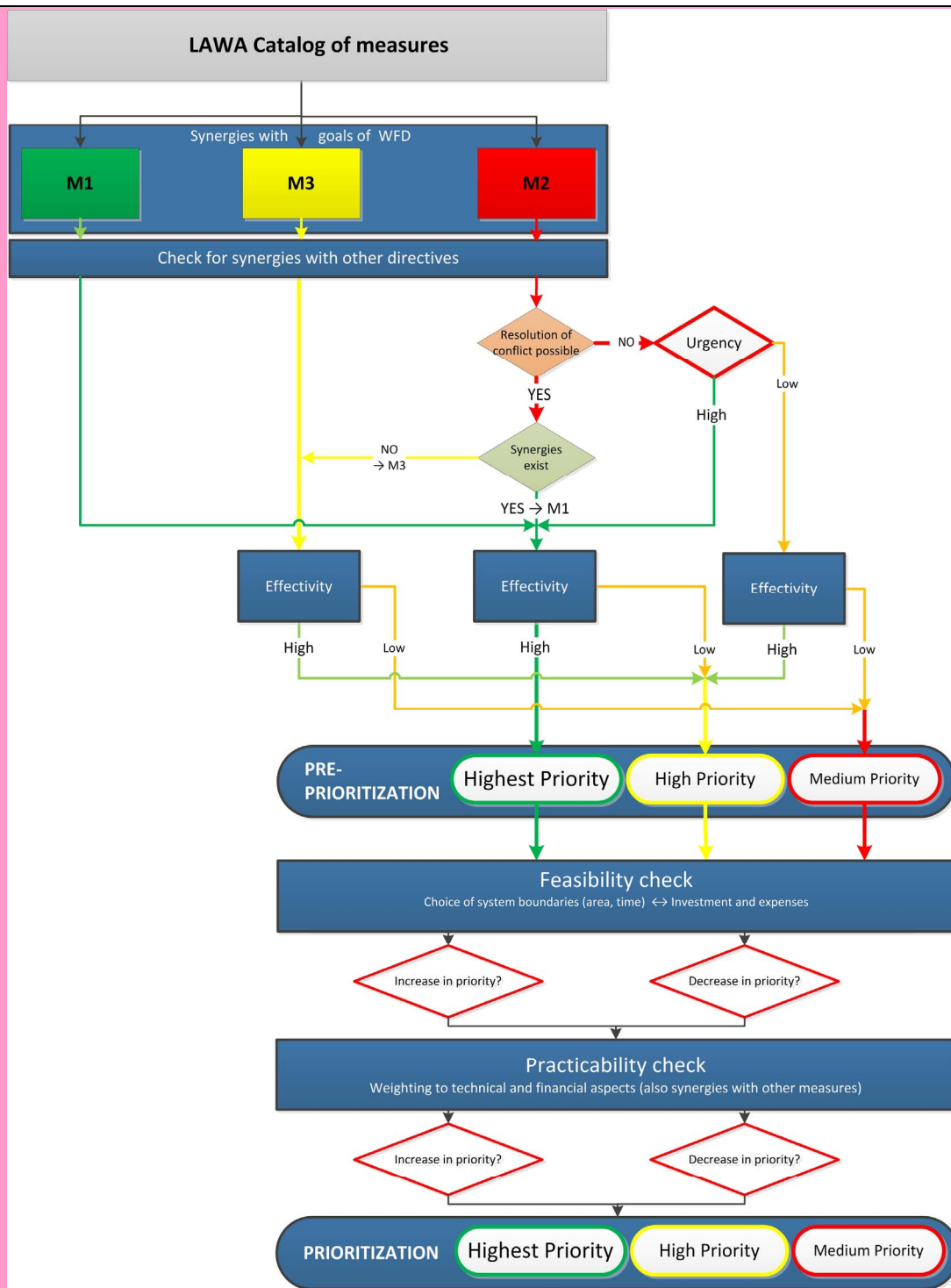
M1-Measures: support the objectives of both directives

M2-Measures: might show a conflict of objectives and need a case-by-case review

M3-Measures: are not relevant for the objectives of the other directive

For the prioritisation of measures four overall criteria can be applied:

1. Synergies with goals of WFD and FD (or even other directives)
2. Effectivity in regard of the WFD and FD
3. Economic feasibility
4. Practicability



Possible process for prioritisation of flood risk management measures considering synergy effects with the FD and according to effectiveness, economic feasibility, and practicability.

Typically at the level of planning flood risk management measures the level of concretion will not allow an economic assessment. Hence, in a first step the prioritization of measures should focus on practicability and effectiveness.

The prioritisation of measures for flood risk management is effected by different criteria such as flood prevention, economic feasibility, practicability, as well as synergy effects to the WFD. Potential synergies between WFD and FD can be expected for category of M1-measures. Therefore, these measures are emphasised compared to other measures. Nonetheless synergy effects can arise from M2- and M3-measures after assessment and evaluation of different criteria for prioritisation.

Source: German Working Group on water issues of the Federal States and the Federal Government ("LAWA"): "Recommendations for coordinated application of the FD and WFD – Synergies at measures data management and public participation", („Empfehlungen zur koordinierten Anwendung der EG-HWRM-RL und EG-WRRL - Synergien bei Maßnahmen, Datenmanagement und Öffentlichkeitsbeteiligung“)

#### 4.1.2 Use of information from the PFRAs in the Article 5 review of the WFD

There is no specific requirement for coordination between the two Directives at the PFRA stage (FD Article 4 and 5) beyond the general requirement for coordination focusing on opportunities for improving efficiency, information exchange and for achieving common synergies and benefits (FD Article 9). However, there are potential synergies between the PFRA process and the characterisation of the River Basin Districts (WFD 5) and the assessment of potentially Significant Water Management Issues (WFD Article 14(1)( b)) in terms of mutual and two-way information exchange (e.g. GIS data sets ).

Article 5 of the WFD requires the following to be carried out for each RBD:

- An analysis of its characteristics
- A review of the impact of human activity
- An economic analysis of water use

The majority of Member States foresee that the Article 5 Review in 2013 could assist the production of the FD flood maps in 2013. There is also potential for the WFD Article 5 review to include challenges connected to floods. It could consider the PFRA and APSFRs, which were not available before, and integrate flood risk as part of characterisation and evaluation of pressures.

The flood maps will be able to draw on some pertinent information on environmental risk from the Article 5 review. An Article 5 characterisation could include information, which is useful for flood maps. e.g. specific section on extreme events, typically includes heavily modified water bodies in the characterisation of the RBD, register of protected areas information, and identification of morphological pressures which maybe are flood risk management related. It also contains information on the economic analysis of water use which provides a sectorial analysis that determines economic activities within the RBD and thus can be linked to flood risk.

Integration of data is required in order to make it easy to identify common pressures and measures between FD and WFD. In addition, WFD pressure and impact analysis and flood maps could be used to set the framework for potential synergies for floodplains and wetlands. Areas subject to flooding outlined in the flood maps need to be retained for flood attenuation under the FD while the WFD PoMs will strive to protect and restore wetlands, many of which are floodplain identified in the flood maps.

## 4.2 Flood risk maps

Flood risk maps must be developed in such a way that the information they contain is consistent with the relevant information presented under the WFD. Floods are classified in some Members States as SWMIs. In terms of the WFD, SWMIs may be related to flow regulation and changes in morphology. In terms of changes to morphology common data sets could include:

- Areas where land use has changed e.g. for development, agriculture or forestry
- Areas where flood defences or weirs to control river water levels have been constructed and have an impact on ecological status of water bodies
- Reaches of rivers that have been dammed to provide storage for power generation or water supply
- Construction of coastal defences to prevent flooding or erosion and have an impact on ecological status of water bodies.

Under the WFD SWMIs regarding point pollution sources may also be mapped. These could include:

- Sewage treatment works
- Aquaculture (i.e. fish farms)
- Manufacturing
- Refuse disposal
- Mining and quarrying

The FD states that:

- The flood risk maps should, where the Member State considers it useful, provide an indication of areas where floods with a high content of transported sediments and debris floods can occur
- The flood maps shall be coordinated with, and may be integrated into WFD Article 5(2) reviews (FD Article 9)

- Flood risk maps must include certain installations (FD Article 6 (5)(c)) such as energy industries (e.g. power stations and refineries), production and processing of minerals, mineral industries, chemical industries, waste management and other activities (e.g. slaughter houses) as defined under Annex 1 of Directive 2008/1/EC concerning integrated pollution prevention and control. This is information that can potentially be gathered from the WFD analysis of characteristics

## 4.3 FRMPs and RBMPs

### 4.3.1 Background to the coordination between FRMPs and RBMPs

FD Recital 17 states that RBMPs and FRMPs are elements of integrated river basin management and so the two processes should use the mutual potential from common synergies and benefits. FD Article 9(2) states that “*the development of the first FRMPs and their subsequent reviews as referred to in Articles 7 and 14 of this Directive shall be carried out in coordination with, and may be integrated into, the reviews of the RBMPs provided for in Article 13(7) of the WFD*”;. FD Article 7(3) requires FRMPs to take into account, amongst other issues, the environmental objectives of WFD Article 4. The FD states that FRMP shall be carried out in coordination with, and may be integrated into, the RBMPs produced under the WFD.

The boxes below provide some examples from Member States where there has been integration between FRMPs and RBMPs.

#### **Integration of FRMPs and RBMPs in Flanders, Belgium**

In Flanders, flood management measures were integrated within the first RBMPs, on the basis of the decree on integrated water management. For the next reporting cycle, a fully integrated plan covering both WFD and FD will be adopted, as foreseen by the decree on integrated water management.

#### **Example of the potential for coordination between FRMP and RBMP in Austria and Finland**

- Finland's legislation requires for the FRMP to have simultaneous public consultation with the RBMP
- Austria will ensure a high level of consistency between the RBMPs and FRMPs with both being subject to the same procedure i.e. competent federal authorities produce a first draft, followed by provinces making additions/revisions and then finalisation by the federal authorities, followed by joint consultation process

#### **Example of the potential for coordination between FRMP and RBMP for the Danube**

The International Commission for the Protection of the Danube River (ICPDR) has produced a plan to meet the requirements of the WFD and FD regarding public consultation and communication during the course of developing the second Danube RBMP and the first FRMP for the Danube River Basin, for the implementation cycle 2015 to 2021. Consultations measures include:

- All accredited observers actively participating in the ongoing work of the ICPDR and are providing their input in the development of the second Danube RBMP, but also the first FRMP
- Specific discussions held with selected key stakeholders about the activities of the ICPDR regarding the implementation of WFD and FD. These stakeholders include the navigation sector, hydropower, sector and agriculture. The results of these discussions will be publicly available
- Raising awareness and informing wider stakeholder groups about the opportunity for public participation, the activities and the timetable regarding the second Danube RBMP and first FRMP via wide range of engagement measures (e.g. websites, newsletters, meetings)
- After the identification of the SWMIs, a stakeholder workshop will be held to support the development of the plan. Through such a workshop, a larger and very focused group of people will be involved in the formalization of the second Danube RBMP and the first FRMP.

#### **Example of the potential for coordination between FRMP and RBMP in Ireland**

In Ireland, the draft flood risk management objectives include a specific objective whereby flood risk management measures should “*support the objectives of the WFD*” and “*prevent deterioration in status, and if possible contribute to, the achievement of good ecological status/potential of water-bodies, including a reduction in the risk of pollution*”. The inclusion of this objective ensures that all options for measures under consideration must be assessed against the potential impacts on, and benefits for, the objectives of the WFD.

### 4.3.2 Measures and WFD objectives

The integrated or coordinated planning under the WFD and FD has the potential to identify win-win measures that can deliver on the objectives of both policies. Typical examples of the way in which the flood risk reduction measures may positively interact with the environmental objectives of the WFD include<sup>3</sup>:

- Use of measures that are aimed at “making room for water” and increasing natural retention and storage capacity e.g. via reconnection of the floodplain to the river, increasing the retention capacity of floodplains
- Adaptation of the design of new and existing structural measures such as flood defences, storage dams and tidal barriers to take into account WFD objectives and obligations, in particular those related to better environmental options (WFD articles 4.3b and 4.7d)
- Reducing urban flooding via increasing storm drain capacities and using SuDS such as construction wetlands and porous pavements

A number of policy recommendations have been developed since the adoption of the WFD to better integrate flood protection policy with the environmental objectives of the WFD<sup>4</sup>.

These flood protection measures, which can be broadly classified as Natural Water Retention Measures (NWRM) are supported by the Blueprint proposed actions<sup>5</sup>. Other policies such as Biodiversity and Nature can also benefit from them, and these measures are included in the concept of Green Infrastructure<sup>6</sup>.

However, in some cases, e.g. typically in highly urbanised areas, flood protection objectives require new infrastructure that may deteriorate the status or prevent the achievement of good status in one or more water bodies, because there is no other feasible alternative. Article 4(7) of the WFD allows such projects only if the conditions set in that article are fulfilled<sup>7</sup>, namely:

- (a) All practicable steps are taken to mitigate the adverse impact on the status of the body of water;
- (b) The reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six years;
- (c) The reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development, and
- (d) The beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

**It should be noted that exemptions are integral part of the WFD and therefore, if applied correctly, they should not be regarded as a conflict with the WFD objectives, but a lawful application of its provisions.**

In case of existing infrastructure for flood protection which physically modifies the water bodies and prevents the achievement of good status, the WFD foresees, as a default, the restoration of the water body in order to enable the achievement of the good status. However, in case the conditions in article 4(3) of the WFD are fulfilled, the water body could be designated as Heavily Modified Water Body (HMWB). These conditions include that

- (a) The changes to the hydromorphological characteristics of that body which would be necessary for achieving good ecological status would have significant adverse effects on legitimate uses such as flood protection

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<sup>3</sup> For further details see DG Environment note "Towards better environmental options for flood risk management" ([http://ec.europa.eu/environment/water/flood\\_risk/better\\_options.htm](http://ec.europa.eu/environment/water/flood_risk/better_options.htm))

<sup>4</sup> See CIS Policy Paper on Hydromorphology and accompanying documents at <https://circabc.europa.eu/w/browse/de079f69-fc5d-4918-8a8f-ab41168a16cf>

<sup>5</sup> See the Blueprint Communication <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012DC0673:EN:NOT>

<sup>6</sup> See Commission Communication on Green Infrastructure at [http://ec.europa.eu/environment/nature/ecosystems/index\\_en.htm](http://ec.europa.eu/environment/nature/ecosystems/index_en.htm)

<sup>7</sup> For more details see CIS Guidance nb. 20 on Exemptions to the Environmental Objectives ([https://circabc.europa.eu/d/a/workspace/SpacesStore/2a3ec00a-d0e6-405f-bf66-60e212555db1/Guidance\\_documentN%c2%b020\\_Mars09.pdf](https://circabc.europa.eu/d/a/workspace/SpacesStore/2a3ec00a-d0e6-405f-bf66-60e212555db1/Guidance_documentN%c2%b020_Mars09.pdf))



- (b) The beneficial objectives served by the artificial or modified characteristics of the water body cannot, for reasons of technical feasibility or disproportionate costs, reasonably be achieved by other means, which are a significantly better environmental option.

The reasons for the designation have to be specifically mentioned in the river basin management plans.

From the above it is clear that the designation process has a built in obligation to consider alternatives which maintain the benefits for flood protection but are better environmental options. Maintenance or rebuilding of existing infrastructure is only possible if there are no better environmental options which maintain the flood protection levels.

In case designation as HMWB is possible, this would mean that alternative objectives (good ecological potential instead of good ecological status) would apply to that water body. This does not mean status quo, because all practicable mitigation measures would need to be taken<sup>8</sup>.

#### **Examples of natural flood management strategies that have the potential to meet the requirements of the FD and WFD**

Natural flood management aims to reduce the downstream maximum water level of a flood or to delay the arrival of the flood peak downstream, increasing the time available to prepare for floods. These aims are achieved by restricting the progress of water through a catchment. Natural flood management strategies can be loosely classified by their likely location and distribution in a catchment as shown in Figure 4.1. They rely on one, or a combination, of the following underlying mechanisms:

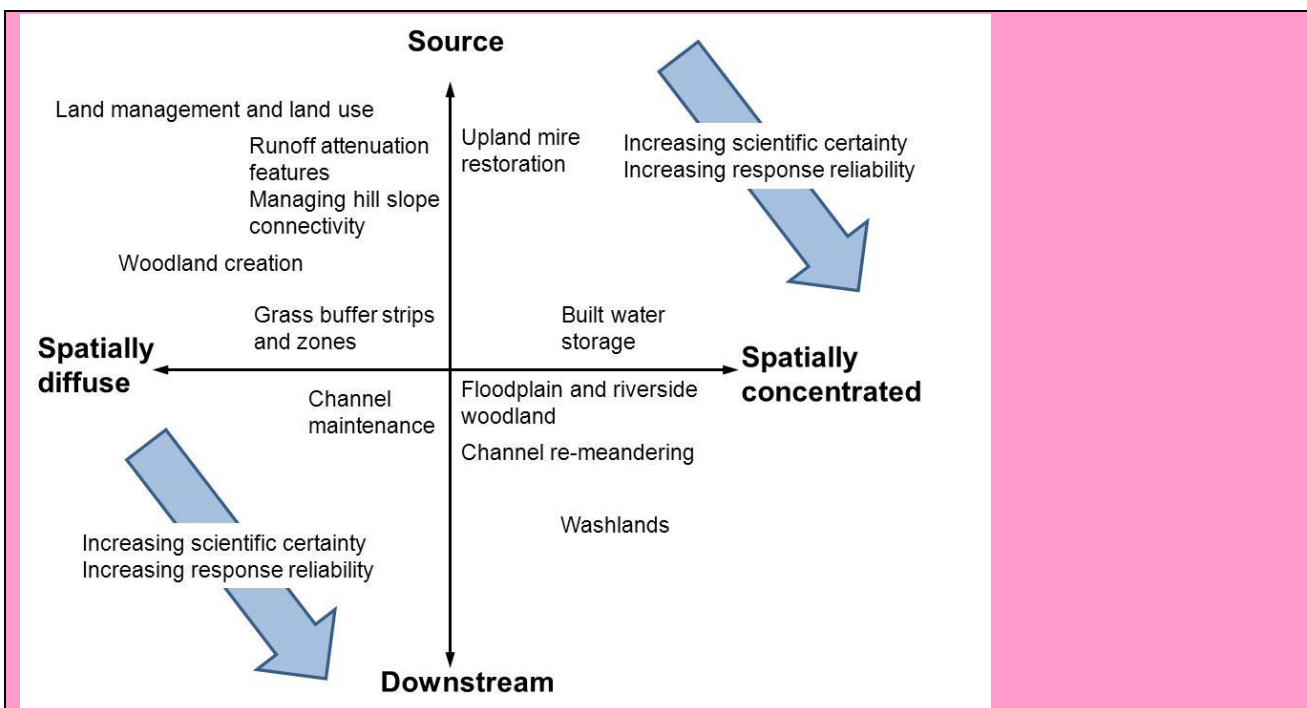
- **Storing water** by using, and maintaining the capacity of, ponds, ditches, embanked reservoirs, channels or land
- **Increasing soil infiltration**, potentially reducing surface runoff, although this can be offset by greater subsurface flows. Free-draining soil will make saturation less likely, and evaporation from soil can also make space for water
- **Slowing water down** by increasing resistance to its flow, for example, by planting floodplain or riverside woods
- **Reducing water flow connectivity** by interrupting surface flows of water, for example, by water storage or planting buffer strips of grass or trees

A natural flood management strategy may have different effects in different landscapes, depending on factors such as soil type, geology, topography, climate and the network of water channels. Soil infiltration will depend on prevailing soil moisture conditions. Natural flood management strategies can contribute to the objectives of the WFD, as well as the FD.

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<sup>8</sup> See CIS Guidance nb. 20 on Exemptions to the Environmental Objectives and nb. 4 on Heavily Modified Water Bodies.





(Source: Parliamentary Office of Science and Technology, 2011)

**Figure 4.1 Classification of natural flood management strategies**

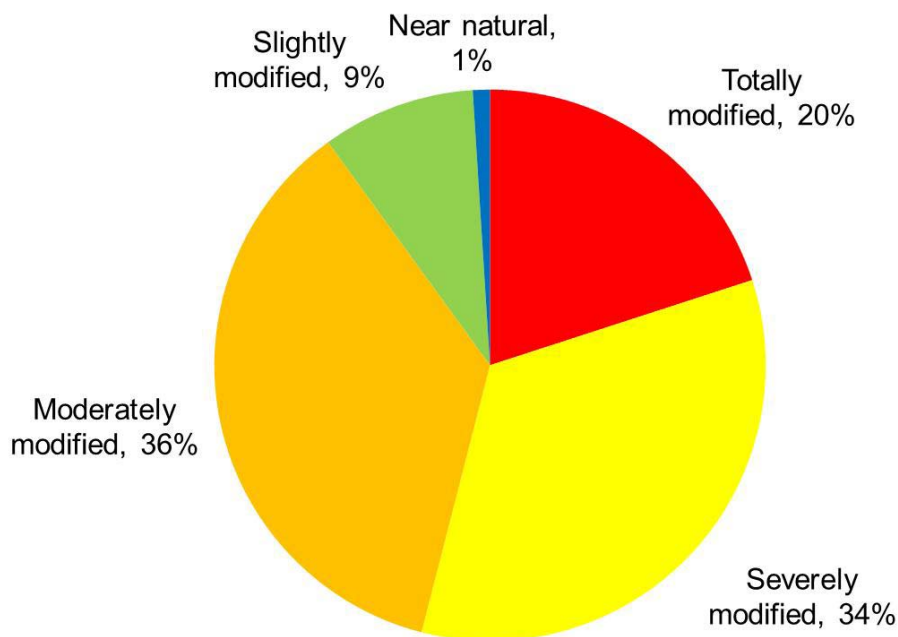
The natural flood management strategies in Figure 4.1 are grouped by the location of their likely deployment, either near the source of a flood or downstream, and by how the strategy may be distributed on the ground. The classification highlights potential governance issues related to implementation. Diffuse measures may require cooperation between land-owners, or coordinated deployment across a catchment.

(Source: Parliamentary Office of Science and Technology, 2011)

### **The status of German floodplains and the benefits of their restoration**

Natural floodplains exhibit a high degree of biodiversity owing to the small-scale variability of habitat conditions that enables different species communities to coexist. Floodplains also assist with the attenuation of flood peaks and, thus, contribute to mitigating flood risk. A survey of German floodplains in 2010, the results of which are shown in Figure 4.2, indicated that most German floodplains have been modified and that less than 10% of the active floodplains fully provide their ecological functions. For example for the Rivers Rhine, Elbe, Danube and Odra in Germany it has been estimated that only 10% to 20% of their natural floodplain can be inundated regularly.

The availability of an inventory and assessment of floodplains can serve as a useful tool to identify nationally important floodplain areas and potential areas for restoration of near-natural floodplains as well as flood protection areas. In this way the restoration of natural floodplains can be undertaken in a way that contributes to providing both environmental and flood risk management benefits and thus is mutually beneficial in meeting the objectives of both the FD and WFD.



- Near natural: River connected to its floodplains. Floodplains are frequently inundated.
- Slightly modified: A small degree of disconnection between the river and floodplain. Floodplains are frequently inundated.
- Moderately modified: Floodplains are partly disconnected from the river by flood mitigation measures. Some inundation of the floodplain still takes place but frequent floods will not inundate the floodplain.
- Severely modified: Floodplains are widely disconnected from the river by flood mitigation measures. Little inundation of the floodplain occurs.
- Totally modified: Floodplains are completely disconnected from the river development by flood protection measures. The floodplain is only inundated during very low probability events.

(Source: Follner et al., 2010)

**Figure 4.2 The status of German floodplains**

In Germany, the federal state of Bavaria is planning to implement a number of measures for flood protection between 2012 and 2020 totalling €2.3 billion, these include measures to “re-naturalise” the river landscape, increasing the retention and discharge capacity of watercourse to meet FD and WFD objectives (Santato et al., 2010).

**Example of measures that promote synergies in meeting the objectives of the FD and WFD in Finland**

The creation of multifunctional wetlands in parts of Finland is designed to promote water conservation in watercourses and coastal areas with a heavy environmental load from agriculture; improve the living conditions for birds; reclaim habitats that were lost when arable areas were drained and improve the conditions of brooks that organisms use as passages. Furthermore, wetland areas reduce harmful flooding downstream and increase low flows. Such measures assist in meeting the objectives of both the FD and WFD.

The investment support in Finland is used to establish wetlands and wetland-like flooded areas in places in which they would occur naturally, on arable areas susceptible to flooding and on terraced drainage areas, and to restore channels in accordance with the principles of natural water construction. The measures must be implemented in accordance with a specific plan, and measures must not have an adverse impact on the drainage situation of arable land cultivated outside the area covered by the measure. The area of a wetland must be at least 0.5% to 1.0% of the area of the upstream catchment area.

### **Example of measures that promote synergies in meeting the objectives of the FD and WFD in the Wandse catchment, Germany**

A detailed plan of possible WFD measures in the Wandse catchment in Germany has been developed in the context of the [SAWA project](#) and is available to local authorities. The existence of a catalogue of measures enables integration and harmonisation with WFD measures from the initial planning phases in FRMP for the catchment. The catalogue of WFD measures encompass the restoration of natural conditions and flow capacity along the river (e.g. removal or modification of the existing weirs) and improvements in the morphological river structure (e.g. increase the connectivity of the river to its floodplains). The implementation of these measures is still pending; however some 80% of the planned measures are currently being considered for implementation. This enables good coordination with the measures to be developed as a part of FRMP as well as allowing FD and WFD objectives to be met.

### **River restoration and flood risk management: Synergies between the WFD and FD for River Orbigo, Spain**

The Órbigo River Project was implemented by the Spanish Ministry of Agriculture, Food and Environment through the Duero River Basin Authority, in compliance with the FD and the WFD and their respective goals of reducing the negative effects of floods and improving the ecological status of water bodies.

The idea behind the project was that by restoring river connectivity with the floodplains, the hydraulic capacity of the river in the event of flooding would be greatly increased, as it would be able to absorb more water in a controlled manner. In turn, through restoration of this connectivity, various natural processes would be re-established that would lead to ecological improvements.

In summary, the project consisted of removing all of the existing defensive structures along 23 km of riverbed, or setting them back beyond the floodplain, depending on whether land use in the floodplain was compatible or not with flooding. In the case of setting the structures back, the location of the new defensive structures was selected on the basis of hydrological and hydraulic studies in such a way so as to exploit the maximum hydraulic capacity of the floodplain to reduce floods and thereby increasing the protection of populated areas.

After the recent floods on March 2013 in the Duero River Basin, the success of the measures taken within the Órbigo river project are evident. The defensive structures, in their new locations set back from the riverbed, have worked out as expected, so that, protecting vulnerable areas from overflows. The water flow occupied productive poplars and other land uses, compatible with the floods, which haven't suffered any damage.

The occurrence of these floods, very close to the finishing of the works done, has shown the effectiveness of the measures carried out, showing the riverside population in place, what Duero River Basin's technicians explained them throughout hydraulic simulation and maps.

The approach taken with this project has led to a reduction of flood damages while improving the river status, only by giving room to the river. This apparently simple action is able to create the conditions for the river to recover itself and either in a more stable and cost-effective manner.

The value of the Órbigo River project for demonstrating outstanding achievements in river management has been recognized being selected as one of the finalist in the International River Foundation European Riverprize in 2013. According the IRF, the knowledge and experiences provided by the project are worth sharing in order to help others to achieve effective river restoration.

Lastly, the Órbigo River example in managing both flood risk and river natural dynamic improvement has been applied successfully in other rivers of the Duero River Basin and up to now, more than 57 kilometres of defensive structures have been removed definitively and more than 5 kilometres have been set back from the riverbed.



Órbigo river before the works



Works recently completed



After six months

**Example of testing whether measures met the objectives of the FD and WFD in Scotland**

In Scotland, preliminary climate checks were carried out of the WFD measures needed to reduce pressures on the water environment and an assessment of the impact on flood risk was included in these preliminary climate checks. It was found that many measures would result in positive effects, particularly in relation to sustainable flood management, mitigation of floods and droughts and climate change adaptation.



### **A joint approach to develop measures for the implementation of the FD and WFD for the River Drava, Austria**

The Sustainable Integrated Management of International River Corridors in South East Europe is a project focused on the integrated sustainable management of international river corridors in this area. The toolkit developed by the project encompasses several EU Directives, in particular the WFD, the FD, the Habitats Directive and the Renewable Energy Directive. The plans, which are being developed within the project, will identify user and land use requirements and also issues such as flood risk, water ecology, spatial planning and tourism at an early stage and coordinate them. The goal is to have a coordinated approach to measures on the River Drava in Austria, as well as across the border in Italy and Hungary.

### **River restoration and flood risk management: Synergies between the WFD and FD for River Ravensbourne, UK**

The River Ravensbourne is a heavily engineered tributary of the Thames that flows through the suburbs of south-east London. In the past five years various reaches of the river have been restored. The manner in which the river has been restored has meant that goals of both the FD and WFD have been met. Figure 4.3 shows a 100 m reach of the River Ravensbourne that flows through Lewisham in south London. The concrete channel was removed and the bank re-profiled.

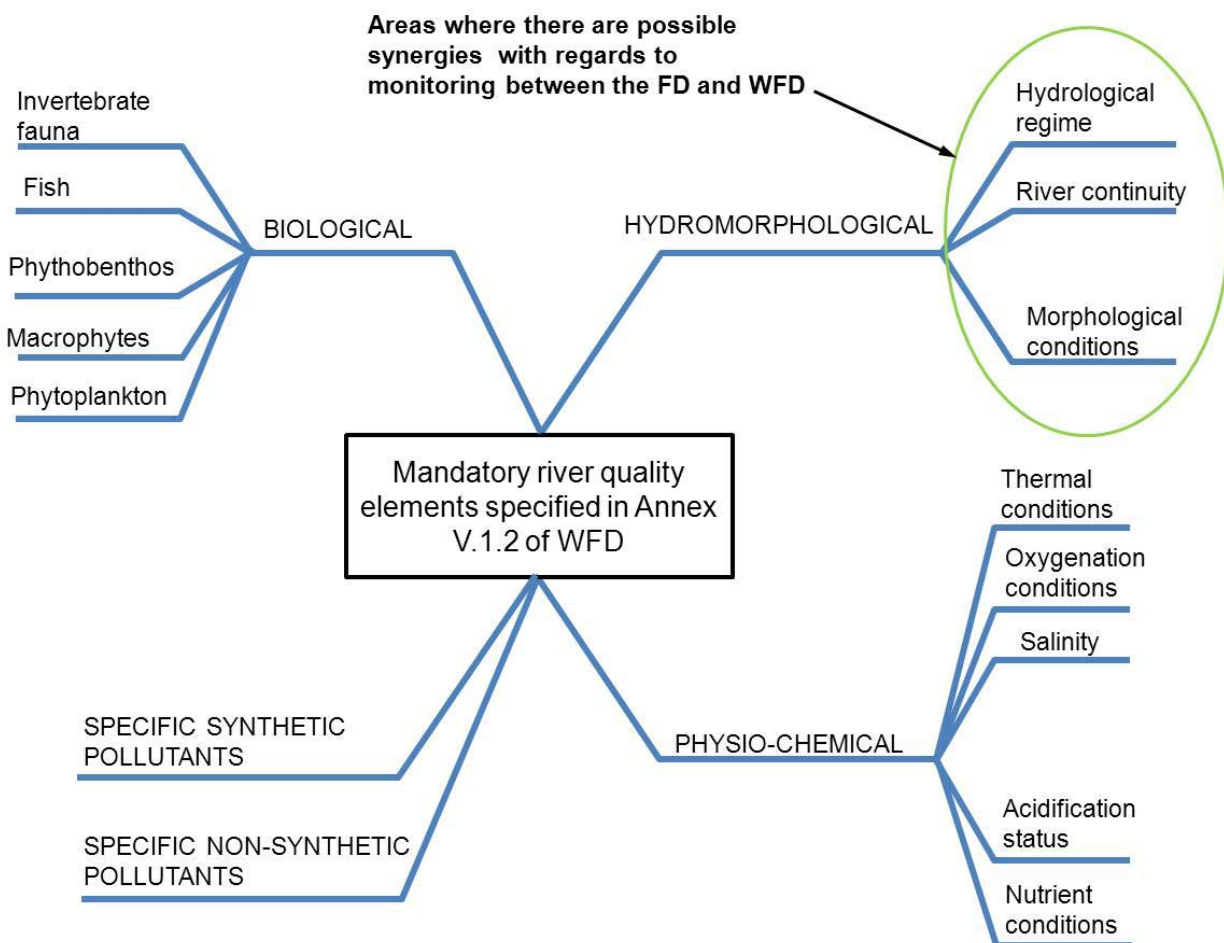


**Figure 4.3 River Ravensbourne in south London , before and after its restoration**

### 4.3.3 Monitoring

The WFD requires the establishment of programmes for monitoring of water bodies' status (WFD Article 8), including the volume and level or rate of flow to the extent relevant for ecological and chemical status and ecological potential. Although for floods it is often the case that water levels and flows are required to be monitored continuously, in some cases it may be possible to coordinate this monitoring programme with the implementation of the FD, such that the data collected could be of use to both. Both Directives also require monitoring of implementation and review on a six yearly cycle, which again might be coordinated to provide synergies.

Under the guidance on the WFD with regards to the number and location of monitoring stations, monitoring is required in a sufficient number of surface water bodies to provide an assessment of the overall surface water status within each catchment or sub-catchment within the RBD. The location of monitoring stations within a water body should provide information that is representative of the general conditions of the water body, and which specifically addresses the objectives of the surveillance monitoring. Therefore, it must enable the assessment of long term changes resulting from natural or anthropogenic activity and provide sufficient information to both supplement the Annex II risk assessments and assist with design of future monitoring programmes. There is also a requirement to measure the volume and rate of flow under the WFD. It should be noted that for flood risk management purposes such data are most likely to be of use for extreme events. Figure 4.4 shows where possible synergies may exist between the WFD and FD in terms of monitoring.



**Figure 4.4** Areas where there are synergies with regards to monitoring between the FD and the WFD

### Example of integration of monitoring networks in Spain

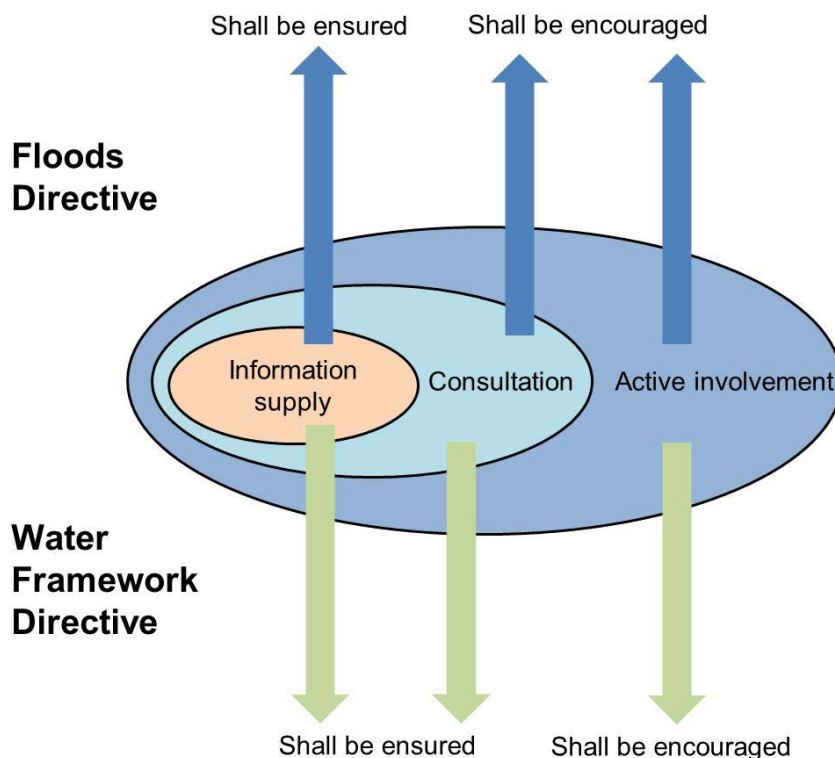
The hydrological monitoring networks in Spain are currently undergoing an integration process at River Basin District level, which includes the hydrological network, the floods early warning system and, where possible, the automatic water quality network. The initiative is lead by the Spanish Water Directorate, with the objective of establishing synergies between data flows that allow harmonizing and streamlining reporting processes and reducing costs of data communication, transmission and management, cost of equipment and operation and maintenance costs. The integration process has been based on a previous thorough analysis of each network in each River Basin District in terms of: number and location of stations, management bodies, communication and transmission protocols, equipment requirements, energy costs and data management. The conclusions of such analysis reveal that there are great opportunities for harmonisation and upgrading of protocols at several stages of the data acquisition and reporting process, thus avoiding duplications and improving the efficiency for delivering hydrological information in both normal and flood situations. The integration process is already operational in the Miño-Sil and Cantábrico Oriental and Cantábrico Occidental River Basin Districts; and at different levels of implementation in the Duero, Guadalquivir, Ebro, Segura and Jucar River Basin Districts.

## 5 Public participation

The phrase “public participation” does not appear in the WFD; however, three forms of public participation with an increasing level of involvement are mentioned:

- Information supply
- Consultation
- Active involvement

According to the WFD the first two are to be ensured, the latter should be encouraged as shown in Figure 5.1. Although the WFD does not require it, active involvement can be very useful for reaching the objectives of the WFD. These three forms can be interpreted as being “public participation”, although public participation usually covers a wider range of activities than prescribed by the WFD.



(Source: Based on EC, 2012)

**Figure 5.1 Levels of public participation in the FD and WFD**

The FD uses the term “public information” (Article 10) where the results of the PFRA and the flood maps are made available to the public and where active involvement of interested parties is encouraged for the FRMP.

## 5.1 A comparison of the public participation timetables for the FD and WFD

The principle reports and public participation requirements required under the FD and WFD are set out in Table 5.1, along with the synergies that could be achieved.

**Table 5.1: Reports and consultation synergies during 2010 to 2015**

Report	Public consultation	Synergy
FD PFRA – complete by 22 December 2011	Not mandatory, however, the FD PFRA should be made available to the public	No matching WFD reporting
WFD Work Programme and Timetable to be completed before 30 June 2013	To be completed between 22 December 2012 and 22 June 2013	No matching FD reporting
Review of the WFD Article 5 Characterisation – complete by 22 December 2013	Not mandatory	Article 5 Report & Flood Maps could share information
FD Flood Maps to be completed by 22 December 2013.	Not mandatory, but the FD Flood Maps should be made available to the public	FD Flood Maps could be combined with the WFD SWMI consultation, if flood risk is classified by the Member State as a SWMI
WFD SWMI interim overview	22 December 2013 to 22 June 2014	
WFD Draft RBMP	22 December 2014 to 22 June 2015	
WFD RBMP to be established by 22 December 2015	Not applicable	FRMP consultation can be aligned with RBMP consultation period
FD FRMP to be established by 22 December 2015	Active involvement of the public encouraged This could be carried out in parallel to WFD 22 December 2014 to 22 June 2015	

## 5.2 Potential WFD and FD consultation synergies

The requirements for coordination in consultation are as appropriate. There are some clear synergies that Member States may have or wish to take advantage of:

- Member States may have chosen to publish a work programme and timetable for the FD in conjunction with that required for the WFD (22 December 2012)
- The FD flood maps could be published at the same time as the SWMI interim overview is established for consultation, either jointly, or in a coordinated manner (22 December 2013), if flood risk or flood protection is a WFD SWMI
- The FRMP and RBMP can be published jointly, or in a coordinated manner, for consultation (22 December 2014)

. Examples of integrating public participation in the FD and WFD are given below.

### **Examples of integrating public participation between the FD and WFD**

- Bulgaria intends to consult simultaneously for both the RBMPs and FRMPs by using one web-site, concurrently sending information and publications to the media, and joint public opinion surveys to ask questions and seek solutions.
- Latvia envisages joint RBMP and FRMP public consultation activities and procedures, involving consultative boards established in each RBD.
- Austria's coordinated public information and consultation of RBMPs and FRMPs will be managed at a national level, supported by CAs in the nine federal states and at a regional level as appropriate.
- Scotland intends to use Local Advisory Groups to engage with FD stakeholders that cover the same areas as RBMP Area Advisory Groups to maximise opportunities for coordination and information exchange.
- France intends to consult simultaneously for both RBMPs and FRMPs
- Romania uses the same institutional framework of River Basin Committees for WFD and FD public information and consultation set up for each River Basin Administrations.
- Slovenia uses a RBMP Common Water Communication Strategy that covers different water related issues which will include appropriate PFRA results in to the WFD consultation activities.



### 5.3 Interaction with stakeholders and other policy areas

Ensuring participation of and collaboration with stakeholders is a key component of both the WFD and the FD. Much of it is dependent on building capacity within stakeholder groups including practitioners and local communities. Resources should be directed towards task-based groups with simple language and clear presentational tools developed to support the capacity building exercise. Appropriate and sustained engagement methods should be developed. By ensuring buy-in and ownership, at an early stage of the process, any basin/sub-basin approach will stand a better chance of success. International river commissions and associated projects provide good examples of this. The benefits of early engagement include:

- Fewer misunderstandings, fewer delays and more effective implementation and monitoring can assist in achieving cost effective solutions
- It legitimizes decisions, public acceptance, commitment and support with respect to the decision making process
- Increasing stakeholder awareness of the various issues in the related River Basin District and sub-basins
- Assists with the support of a common discourse as a basis for long-term perspectives

There may be some cases where the key stakeholders that need to be consulted are not always the same for both Directives and will need to be engaged with separately. However, in terms of engaging with stakeholders both for the FD and WFD the following could be important:

- Stakeholders must be actively engaged at all stages to ensure buy-in and ownership
- Simple language is essential because technical jargon can mislead or alienate members of the public and practitioners from other fields
- GIS tools can help to convey complex information and bring concepts to life which could support engagement

The active involvement of all interested parties under FD Article 10 shall be coordinated, as appropriate, with the involvement of interested parties under WFD Article 14. This will require coordination between the relevant CAs, and provides opportunities for synergies. This may be facilitated by including a map in the (draft) river basin management plans which shows where (draft) flood risk management plans have been produced with a cross reference where the document can be found /obtained as well as vice versa to include a map in the (draft) flood risk management plans which shows status of water bodies with a cross reference where the document can be found /obtained, both together with a brief explanation that these cross-references are aiming for the achievement of potential synergies as highlighted in this Resource Document.

#### **Example of the potential for coordination of stakeholder consultation between FRMP and RBMP in England and Wales**

In June 2013 the Environment Agency produced a summary report on their approach to stakeholder consultation for FRMPs and RBMPs. They engaged with national governmental and non-governmental organisations, risk management authorities, private companies and individuals across England and Wales with regards to the coordination of consultation between FRMPs and RBMPs. The 82 respondents were very supportive of this, with 67% suggesting they should be coordinated. There was support for coordination by consulting on the plans at the same time, and at a catchment scale. Some of the reasons given for this integrated consultation by stakeholders were as follows:

- Ensures that links between FRMPs and RBMPs are made where needed
- Provides efficiencies from carrying out consultations over the same timescale
- Ensures joint issues are more easily seen
- Allows joint benefits from both to be more easily identified

The Environment Agency supports the aim of consulting on the draft consolidated FRMP and the draft RBMP at the same time and they will look in more detail at the practicalities of doing this. Currently the Environment Agency sees this coordination working most effectively at the catchment scale.

(Source: Environment Agency, 2013)

### **Example of integrated stakeholder consultation for the FD and WFD via “River Dialogues” in Austria**

In 2008 Austria started as part of WFD Article 14, to encourage the involvement of all interested parties in the implementation of this Directive ,via a “River Dialogue“ in addition to more formal steps. The challenge for Austria to attain good status of rivers is that many Austrian rivers have been modified (e.g. via banks protection or straightening their course to provide flood protection). This is why issues relating to flood management are part of the “River Dialogues” discussions. To date 550,000 Austrians have discussed relevant WFD and FD topics relating to “their river”. In July 2012 the first international dialogue for the Untere Salzach River was initiated between Austria and Bavaria in Germany and successfully completed in July 2013. To date 13 “River Dialogues” have been held in several provinces of Austria. Based on the feedback and the positive experience in several River Dialogues a working document for the floods community was developed to describe the process of public participation beyond the legal requirements.

### **International Commission for the Protection of the Danube River: A coordinated plan to integrated public participation in the FD and WFD**

The International Commission for the Protection of the Danube River (ICPDR) has put in place a coordinated public consultation and communication plan to assist with the development of the second River Basin Management Plan and first Flood Risk Management Plan for the Danube River Basin, from March 2012 to December 2015. The document serves as a guide for participation and it deals with public participation on a basin-wide, international level. Integrated consultation measures that are and will be carried out by the ICPDR include:

- Specific discussions held with selected key stakeholders concerning the activities of the ICPDR regarding the implementation of WFD and FD including representatives of the navigation, hydropower and agriculture sectors. The results of these discussions will be publicly available.
- Raising awareness and informing wider stakeholder groups about the opportunity for public participation, the activities and the timetable regarding the RBMP and FRMP including:
  - Information on the ICPDR website with links to the national activities and relevant national websites
  - The development of fact sheets and other technical reports, especially if dealing with issues such as significant water management issues
  - Publication of articles in the Danube Watch the official newsletter of the ICPDR
  - Targeted mailings to stakeholder groups
  - Publishing information in other media
- Stakeholder Workshop: After the identification of the Significant Water Management Issues, a stakeholder workshop will be held to support the development of the plan. Through such a workshop, a larger and focused group of people will be involved in the formalization of the Second Danube River Basin Management Plan and the first Flood Risk Management Plan
- A response paper on the inputs will be developed and published, so that the stakeholders can see how their input has been considered by the ICPDR

(Source: International Commission for the Protection of the Danube River, 2012a)

## **6 Summary**

There are many opportunities to link development of objectives and measures. By gaining a mutual understanding through sharing information, working together better river basin management can be achieved. The first cycle of FD is currently being undertaken so lessons are still being learnt. Good practice needs to be shared between member states to continue the learning process to help optimise the benefits of a more coordinated approach to river basin management planning. This paper should be reviewed after the first cycle is complete in 2015, making use of Member States’ experience and intentions for the next planning cycle.

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